Report Information
from Dialog DataStar

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Fingerprint pre–alignment for hybrid match–on–card system.

Accession number & update
0009828254 20080406.
Conference information
Sixth International Conference on Information, Communications and Signal Processing, Singapore, Singapore, 10–13 Dec. 2007.
Source
Sixth International Conference on Information, Communications and Signal Processing, 2007, p. 1630–3, 15 refs, ISBN: 978–1–4244–0982–2. Publisher: IEEE, Piscataway, NJ, USA.
Author(s)
Lam–H–K, Yau–W–Y, Chen–T–P, Hou–Z, Wang–H–L.
Author affiliation
Lam, H.K., Yau, W.Y., Chen, T.P., Hou, Z., Wang, H.L., Inst. for Infocomm Res., Singapore, Singapore.
Abstract
Smartcard has limited memory and processing resources. If we can perform some generic and **time** consuming algorithm in the host PC that **captures** the query **fingerprint image,** the **time** taken for matching in the smartcard could be reduced considerably. For this reason, we propose a new **fingerprint pre–**alignment algorithm in the host PC that obtains small amount of information from the smartcard, find the **alignment** point and angle and send the **aligned** query **fingerprint** template to the smartcard for matching. Our **pre–**alignment algorithm achieved more than 90% genuine acceptance **rate** on the FVC 2000 database and within small distance and angle tolerance.
Descriptors
BIOMETRICS–ACCESS–CONTROL; **IMAGE–**MATCHING; SMART–CARDS.
Classification codes
B6135 **Optical–**image–and–video–signal–processing*;
C5260B **Computer–**vision–and–image–processing–techniques*.
Keywords
fingerprint–prealignment; hybrid–match–on–card–system; smartcard;
query–fingerprint–image; biometrics.
Treatment codes
P Practical.
Language
English.
Publication type
Conference–paper.
Availability
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Fingerprint image mosaicking by recursive ridge mapping.

Dialog eLinks

Full text options ISI ITO Full Text Retrieval Options

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0009624783 20071116.

Source

IEEE Transactions on Systems Man and **Cybernetics**--Part B (Cybernetics) , {IEEE-Trans-Syst-Man-Cybern-B-Cybern-USA}, Oct. 2007, vol. 37, no. 5, p. 1191-203, 34 refs, CODEN: ITSCFI, ISSN: 1083-4419. Publisher: IEEE, USA.

Author(s)

Kyoungtaek-Choi, Heeseung-Choi, Sangyoun-Lee, Jaihie-Kim.

Author affiliation

Kyoungtaek Choi, Heeseung Choi, Sangyoun Lee, Jaihie Kim, Yonsei Univ., Seoul, South Korea.

Abstract

To obtain a large **fingerprint image** from several small partial **images,** mosaicking of **fingerprint images** has been recently researched. However, existing approaches cannot provide accurate transformations for mosaics when it comes to **aligning images** because of the plastic distortion that may occur due to the nonuniform contact between a finger and a sensor or the deficiency of the correspondences in the **images.** In this paper, we propose a new scheme for mosaicking **fingerprint images,** which iteratively matches ridges to overcome the deficiency of the correspondences and compensates for the amount of plastic distortion between two partial **images** by using a thin-plate spline model. The proposed method also effectively eliminates erroneous correspondences and decides how well the transformation is estimated by calculating the **registration** error with a normalized distance map. The proposed method consists of three phases: feature extraction, transform estimation, and mosaicking. Transform is initially estimated with matched minutia and the ridges attached to them. Unpaired ridges in the overlapping area between two **images** are iteratively matched by minimizing the **registration** error, which consists of the ridge matching error and the inverse consistency error. During the estimation, erroneous correspondences are eliminated by considering the geometric relationship between the correspondences and checking if the **registration** error is minimized or not. In our experiments, the proposed method was compared with three existing methods in terms of **registration** accuracy, **image** quality, minutia extraction **rate,** processing **time,** reject to fuse **rate,** and verification performance. The average **registration** error of the proposed method was less than three pixels, and the maximum error was not more than seven pixels. In a verification test, the equal error **rate** was reduced from 10% to 2.7% when five **images** were combined by our proposed method. The proposed method was superior to other compared methods in terms of **registration** accuracy, **image** quality, minutia extraction **rate,** and verification.

Descriptors

FEATURE-EXTRACTION; **FINGERPRINT-**IDENTIFICATION; **IMAGE-**MATCHING; **IMAGE-REGISTRATION; IMAGE-**SEGMENTATION; ITERATIVE-METHODS; SPLINES-MATHEMATICS; TRANSFORMS.

Classification codes

B6135 **Optical-**image-and-video-signal-processing*;
B0230 Integral-transforms;
C5260B **Computer-**vision-and-image-processing-techniques*;
C1130 Integral-transforms;
C6130S Data-security.

Keywords

image-quality; **image-**registration; transform-estimation; feature-extraction; thin-plate-spline-model; ridge-matching; **image-**alignment; recursive-ridge-mapping; **fingerprint-**image-mosaicking.

Treatment codes

P Practical;
T Theoretical-or-mathematical.

Language

English.

Publication type

Journal-paper.

Digital object identifier

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Efficient alignment of fingerprint images.

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0007462221 20070101.
Conference information
Proceedings of 16th International Conference on Pattern Recognition,
Quebec City, Que., Canada, 11–15 Aug. 2002.
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Proceedings 16th International Conference on Pattern Recognition, 2002, vol.3, p. 748–51 vol.3, 8 refs, pp. 4 vol.(xxix+834+xxxv +1116+xxxiii+1068+xxv+418), ISBN: 0–7695–1695–X. Publisher: IEEE Comput. Soc, Los Alamitos, CA, USA.
Author(s)
Ramoser–H, Wachmann–B, Bischof–H. Editor(s): Kasturi–R, Laurendeau–D, Suen–C.
Author affiliation
Ramoser, H., Adv. Comput. Vision, Vienna, Austria.
Abstract
Fingerprint matching is a common technique for biometric authentication. Solid state sensors for **fingerprint** recognition are used in small sized embedded systems. The size of these sensors makes it necessary to store several impressions of the same finger. In order to reduce the memory requirements and matching **time** all these **images** can be fused into one larger **image.** We present a RANSAC based method to determine a rigid transformation which **aligns** two **fingerprint images** using solely minutiae coordinates and minutiae angles. The reliability of the method is demonstrated with experimental results.
Descriptors
FINGERPRINT–IDENTIFICATION; **IMAGE–**MATCHING; OPTIMISATION; SENSOR–FUSION.
Classification codes
C5260B **Computer–**vision–and–image–processing–techniques*;
C1250M **Image–**recognition;
C5260A Sensor–fusion;
C1180 Optimisation–techniques.
Keywords
fingerprint–matching; biometric–authentication; optimization; **alignment;** RANSAC; minutiae–coordinates; minutiae–angles; **image–**matching; **image–**fusion.
Treatment codes
T Theoretical–or–mathematical;
X Experimental.
Language
English.
Publication type
Conference–paper.
Availability
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Machine Vision Applications, Architectures, and Systems Integration V.

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0005509051 20070101.
Conference information
Machine Vision Applications, Architectures, and Systems Integration V,
Boston, MA, USA, 18–19 Nov. 1996.
Sponsor(s): SPIE.
Source
Proceedings of the SPIE – The International Society for Optical Engineering,
{Proc–SPIE–Int–Soc–Opt–Eng–USA}, 1996, vol. 2908, CODEN: PSISDG, ISSN: 0277–786X. Publisher: SPIE–Int. Soc. Opt. Eng, USA.
Abstract
The following topics were dealt with: machine vision applications; developments in **high–**speed inspection using intelligent CCD cameras; **high–**speed electron beam data verification system using high– performance neural network accelerator board; optical system for real– **time** web–process defect inspection; sheep–pelt grading using laser scanning and pattern recognition; novel **high–**speed architecture for machine vision applications; novel RAM–based neural networks for object recognition; automated matching technique for identification of **fingerprints;** neural–network–based system for recognition of partially occluded shapes and patterns; using TDI camera with nonzero viewing angles for surface inspection; system for characterizing small fibers; vision–based coin inspection system; multiscale data analysis for leather defect detection; automatic machine vision for lace inspection; programmable CCD camera equipped with user–configurable video **rate** digital video processing for use in industrial inspection; surface segmentation of laser range **images** for automated facility mapping; new multiexpert architecture for high–performance object recognition; one–dimensional Fourier transform coefficients for rotation invariant texture classification; automated X–ray detection of contaminants in continuous food streams; parallel algorithms for **real–**time **tracking;** adaptive object's motion parameters evaluation in the presence of non–steady–state background by high–resolving TV observing system; research on rapid agile metrology for manufacturing based on **real–**time multitask operating system; improving the method of testing tensile strength of material by 3D **image;** compact optical correlator for machine vision with optically addressed bacteriorhodopsin spatial light modulator; height data from gradient maps; high–performance **image** processing system for powder mixture analysis; system for **high–**speed **image** sequence acquisition; high– **frame–**rate display system for study of motion perception; Prolog–based prototyping software for machine vision; automated generation of finite–state machine lookup tables for binary morphology; multimedia extensions to prototyping software for machine vision.
Descriptors
COMPUTER–VISION.
Classification codes
B0100 General–electrical–engineering–topics*;
B6140C **Optical–**information–image–and–video–signal–processing;
C1250 Pattern–recognition*;

C5260B **Computer–**vision–and–image–processing–techniques.

Keywords

machine–vision; **high–**speed–inspection; intelligent–CCD–cameras; electron–beam–data–verification–system; neural–network–accelerator–board; optical–system; **real–**time–web–process–defect–inspection; pattern–recognition; RAM–based–neural–networks; object–recognition; TDI–camera; multiscale–data–analysis; leather–defect–detection; programmable–CCD–camera; **laser–**range–images; one–dimensional–Fourier–transform; optical–correlator; **high–**frame–rate–display–system; Prolog–based–prototyping–software; finite–state–machine–lookup–tables.

Language

English.

Publication type

Conference–proceedings; Journal–paper.

Availability

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Edition

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Maryland progress in image understanding.

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Conference information

Proceedings of 23rd **Image** Understanding Workshop, Monterey, CA, USA, 13–16 Nov. 1994.
Sponsor(s): Advanced Res. Projects Agency.

Source

Image Understanding Workshop. Proceedings, 1994, vol.1, p. 9–20 vol.1, 45 refs, pp. 2 vol. xxiii+xv+1647. Publisher: Morgan Kaufmann Publishers, San Francisco, CA, USA.

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Aloimonos, Y., Chellappa, R., Davis, L.S., Rosenfeld, A., Comput. Vision Lab., Maryland Univ., College Park, MD, USA.

Abstract

Research in the Computer Vision Laboratory at Maryland deals with many aspects of computer vision, both basic and applied. Applied research on vision for unmanned ground vehicles and analysis of aerial **images** is described elsewhere in these Proceedings. This report reviews our other research in **image** understanding conducted at the Laboratory during the **period** February 1993–August 1994. The areas covered include purposive vision; navigation; motion analysis; recovery and **registration;** recognition and invariants; geometric properties and algorithms; nonoptical sensors and multisensor fusion; faces and **fingerprints;** and documents.

Descriptors

COMPUTER–VISION; **IMAGE–**RECOGNITION; MOTION–ESTIMATION.

Classification codes

B6140C **Optical–**information–image–and–video–signal–processing*;
C1250 Pattern–recognition*;
C5260B **Computer–**vision–and–image–processing–techniques.

Keywords
image–understanding; Computer–Vision–Laboratory; Maryland–progress; computer–vision; navigation; motion–analysis; **image–**registration; **image–**recovery; **image–**recognition; geometric–properties; nonoptical–sensors; multisensor–fusion; **fingerprints;** documents.

Treatment codes
P Practical.

Language
English.

Publication type
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A fingerprint image recognition method for network user identification.

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Proceedings. ICCI '92. Fourth International Conference on Computing and Information (Cat. No.92TH0448–1), Toronto, Ont., Canada, 28–30 May 1992.
Sponsor(s): IEEE; Natural Sci. Eng. Res. Council of Canada; York Univ. Toronto; Laurentian Univ. Sudbury.

Source
Proceedings. ICCI '92. Fourth International Conference on Computing and Information (Cat. No.92TH0448–1), 1992, p. 369–72, 3 refs, pp. xxviii+484, ISBN: 0–8186–2812–X. Publisher: IEEE Comput. Soc. Press, Los Alamitos, CA, USA.

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Kobayashi–T. Editor(s): Koczkodaj–W–W, Lauer–P–E, Toptsis–A–A.

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Abstract
This paper proposes a software–oriented **fingerprint image** recognition method for user identification in information network systems. In the scheme, the **registered fingerprint** information extracted from a thinned binary **image** with 1–pixel line width is compared against the thinned input **fingerprint** binary **image** with w–pixel line width (wgreater–than–or–equal2). Since minutiae of **fingerprints** are not used, **image** reconstruction, which consumes much **time,** is unnecessary. Mechanisms to reduce the matching **time** are shown. Applications for user identification of terminal users and cardholders of smart cards are introduced.

Descriptors
AUTHORISATION; PATTERN–RECOGNITION; SECURITY–OF–DATA.

Classification codes

C6130S Data–security*;
C5260B **Computer–**vision–and–image–processing–techniques;
C5530 Pattern–recognition–and–computer–vision–equipment.

Keywords

fingerprint–image–recognition–method; network–user–identification; software–oriented; information–network–systems; **image–**reconstruction; smart–cards.

Treatment codes

P Practical.

Language

English.

Publication type

Conference–paper.

Availability

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Digital object identifier

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Publication date

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Edition

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Search Strategy

No.	Database	Search term	Info added since	Results
1	INZZ	(threshold OR limit) AND (increment OR decrement) AND image$1	unrestricted	93
2	INZZ	track$3 OR regist$6 OR align$4 OR stitch$3	unrestricted	327018
3	INZZ	1 AND 2	unrestricted	5
4	INZZ	fingerprint$1	unrestricted	6554
5	INZZ	sampl$3 OR imag$3 OR captur$3 OR slice OR swath OR segment OR portion OR part OR piece	unrestricted	1975268
6	INZZ	4 AND 5	unrestricted	3975
7	INZZ	6 AND 2	unrestricted	366
8	INZZ	(threshold OR limit) AND (increment OR increase OR decrement OR decrease)	unrestricted	30866
9	INZZ	7 AND 8	unrestricted	1
10	INZZ	rate OR speed OR time OR delay OR period OR delta OR dt	unrestricted	2804069
11	INZZ	7 AND 10	unrestricted	127
12	INZZ	5 NEAR 10 AND 11	unrestricted	16

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